

8/1993 Wu 359/59

European Pat. Off. 345/904

WIPO 345/93

United States Patent [19]

Hebiguchi

Patent Number: [11]

5,497,146

Date of Patent: [45]

Mar. 5, 1996

[54] MATRIX WIRING SUBSTRATES	5,184,235
[75] Inventor: Hiroyuki Hebiguchi, Sendai, Japan	5,212,573 5,220,443 5,233,448
[73] Assignee: Frontec, Incorporated, Sendai, Japan	FO
[21] Appl. No.: 68,461 [22] Filed: May 27, 1993	0369828 56-212961 8805170
[30] Foreign Application Priority Data Jun. 3, 1992 [JP] Japan 4-143009 Jul. 10, 1992 [JP] Japan 4-184208 Feb. 18, 1993 [JP] Japan 5-29462	Primary Exam Assistant Exan Attorney, Agen
[51] Int. Cl. ⁶	A matrix wirin electrostatic conected to a mwiring can be in
[58] Field of Search	substrate, whe

345/90, 91, 92, 93, 206, 904; 359/54, 58,

59, 60; 445/24; 257/59, 328, 355, 356,

360, 363, 409, 452, 484

[57]	Δ	RCTR	Δ ("

5/1990

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ry Examiner-Donald J. Yusko ant Examiner—Edwin C. Holloway, III ey, Agent, or Firm-Guy W. Shoup; Patrick T. Bever

Japan .

FOREIGN PATENT DOCUMENTS

rix wiring substrate is provided which can perform an ostatic countermeasure until drive circuits are conto a matrix wiring substrate, whereby the circuit can be inspected at an earlier stage. The matrix wiring substrate, where circuit wiring is formed over a substrate, includes a guard ring formed around the circuit wiring and connected to the circuit wiring, and separable portions arranged between the circuit wiring and the guard ring for controlling the conduction between the circuit wiring and the guard ring. Since the circuit wiring is conducted with the guard ring by effecting externally the separable portion, lines of the circuit wiring are short-circuited electrically. No potential difference between the wires causes any electric

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9 Claims, 10 Drawing Sheets

discharge, thus resulting in increased manufacturing yield.



